

Name _____ Period _____ Date _____

HANDOUT 7B-4

Problem Solving

1. The Buddhist Monk Problem

Exactly at sunrise one morning, a Buddhist monk set out to climb a tall mountain. The narrow path was not more than a foot or two wide, and it wound around the mountain to a beautiful, glittering temple at the mountain peak.

The monk climbed the path at varying rates of speed. He stopped many times along the way to rest and to eat the fruit he carried with him. He reached the temple just before sunset. At the temple, he fasted and meditated for several days. Then he began his journey back along the same path, starting at sunrise and walking, as before, at variable speeds with many stops along the way. However, his average speed going down the hill was greater than his average climbing speed.

Prove that there must be a spot along the path that the monk will pass on both trips at exactly the same time of day.

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2. Husbands and Wives Problem

Three men—Fred, Ed, and Ted—are married to Joan, Sally, and Vickie, but not necessarily in that order. Joan, who is Ed's sister, lives in Detroit. Fred dislikes animals. Ed weighs more than the man who is married to Vickie. The man married to Sally breeds Siamese cats as a hobby. Fred commutes over 200 hours a year from his home in Ann Arbor to his job in Detroit. Match up the men with the women they married.

Source: Whimbey, A. & Lochhead, J. (1982). *Problem solving and comprehension: A short course in analytic reasoning* (p. 67). Philadelphia: Franklin Institute Press.

3. The Hobbits-and-Orcs Problem

Three Hobbits and three Orcs arrive at a river bank, and they all wish to cross onto the other side. Fortunately, there is a boat, but unfortunately, the boat can only hold two creatures at one time. Also, there is another problem. Orcs are vicious creatures, and whenever there are more Orcs than Hobbits on one side of the river, the Orcs will immediately attack the Hobbits and eat them up. Consequently, you should be certain that you never leave more Orcs than Hobbits on any river bank. How should the problem be solved? (Note that the Orcs, though vicious, can be trusted to bring the boat back!)

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4. Truth-tellers and Liars

You are visiting a strange country in which there are just two kinds of people—truth-tellers and liars. Truth-tellers always tell the truth and liars always lie. You hail the first two people you meet and say, "Are you truth-tellers or liars?" The first person mumbles something you can't hear. The second says, "He says he is a truth-teller. He is a truth-teller and so am I." Can you trust the directions that these two may give you?

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Name _____ Period _____ Date _____

HANDOUT 7B-5

Which of the following are the more frequent causes of death in the United States?

1. All accidents or strokes?

I am _____ % certain of my answer. *

2. Suicide or blood poisoning?

I am _____ % certain of my answer.

3. Homicide or diabetes?

I am _____ % certain of my answer.

4. Motor vehicle (car, truck, bus) accident or colorectal cancer?

I am _____ % certain of my answer.

5. Drowning or leukemia?

I am _____ % certain of my answer.

Which country has the largest population?

6. Morocco or Saudi Arabia?

I am _____ % certain of my answer.

7. Australia or Myanmar?

I am _____ % certain of my answer.

8. South Africa or Vietnam?

I am _____ % certain of my answer.

9. Libya or Sri Lanka?

I am _____ % certain of my answer.

10. Iraq or Tanzania?

I am _____ % certain of my answer.